

CLAIMS

1. A monitoring device (18') integrated to the chip of a microprocessor (12) executing a sequence of instructions, comprising:

a message calculation means (26) for generating digital messages of different types each corresponding to the execution of an instruction from among a plurality of predetermined instructions, the calculation means (26) being likely to generate several types of messages at the same time;

a buffer memory (28) divided into several blocks (A, B, C, D, E), each of which is provided to only store messages of one of the types of messages likely to be generated at the same time, the size of each block depending on the maximum frequency at which the messages can be stored therein;

a means (26) for, each time one or several messages are simultaneously stored in blocks (A, B, C, D, E) of the buffer memory (28), storing in a predetermined block (F) of the buffer memory a coded value designating said blocks of the buffer memory.

2. The device of claim 1, further comprising a means (30) for reading in the order of their storage the coded values stored in said predetermined block (F) of the buffer memory (28), for reading in the order of their storage the messages stored in the block(s) of the buffer memory (A, B, C, D, E) designated by each coded value, and providing the read messages to an external analysis tool (24).

3. The monitoring device of claim 1, in which each message is formed of one or several data (I-CNT, ADDR), two messages of a same type being likely to be formed of data of the same type and/or of different types, and in which:

each block (A, B, C, D, E) of the buffer memory is divided into sub-blocks (A', A''), each of which is provided to only store data of a single type of data messages stored in said block, each sub-block being sized to store a predetermined number of data depending on the frequency at which the data are stored therein, and in which

said coded value further designates in which sub-blocks of the block(s) of the buffer memory data have been stored.

4. The device of claim 3, further comprising a means (30) for reading in the order of their storage the coded values stored in said predetermined block (F) of the buffer memory (28), for reading in the order of their storage the data stored in the sub-block(s) of the buffer memory (A', A'') designated by each coded value, for forming messages from the read data, and for providing said messages to an external analysis tool (24).

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5. The monitoring device of claim 4, in which the calculation means (26) is provided not to write a message comprising data which must be stored in a sub-block (A', A'') saturated with data, and to generate an error message indicating that at least one message of the type of said message has been lost.

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6. A method for monitoring a microprocessor executing a sequence of instructions, comprising the steps of:

a/ generating one or several digital messages respectively corresponding to the execution of one or several instructions from among a plurality of predetermined instructions, several messages that can be generated at the same time;

b/ each storing messages generated at step a/ in a predetermined block (A, B, C, D, E) of the buffer memory (28), the messages simultaneously generated at step a/ being stored in separate blocks, and storing at the same time a coded value indicating in which blocks the messages have been stored;

c/ recovering the coded value written at step b/, and based on said coded value, recovering the messages stored at step b/.

7. The monitoring method of claim 6, comprising the step of:

d/ if a message generated at step a/ must be stored at step b/ in a block of the buffer memory which is saturated, generating and storing a specific error

message indicating that at least one message of the type of said message has been lost.

8. The monitoring method of claim 6, in which each message is formed
5 of one or several data, where two messages can be formed of data of the same type and/or of data of different types, and in which

at step b/ each of the data forming the messages generated at step a/ is stored in a sub-block (A', A'') of the buffer memory (28) provided to only store a single type of data, the coded value indicating in which sub-blocks the data have
10 been stored; and

step c/ consists of recovering the coded value written at step b/, and based on said coded value, recovering the data of messages stored at step b/ and restoring the message(s) generated at step a/.

9. The monitoring method of claim 8, comprising the step of:

d/ if a message generated at step a/ comprises data to be stored at step b/ in a sub-block of the buffer memory which is saturated, generating and storing a specific message error indicating that at least one message of said message has been lost.